

REMARKS/ARGUMENTS

Favorable reconsideration of this application is requested in view of the above amendments and in light of the following remarks and discussion.

Claims 1-7, 11, 12, 17-29, and 31-35 are pending. Claims 32-35 are newly added. Claims 17-25 are withdrawn. Claims 8-10, 13-16, and 30 are canceled. Claims 1, 26, 27, 28, and 29 are amended. Support for the amendment to Claim 1 can be found in now-canceled dependent Claim 30 and Fig. 11 and the description thereof, for example. Support for the amendments to Claims 26-29 is self-evident. Support for newly added Claim 32 can be found in Fig. 11 and in the specification in numbered paragraph [0053], for example. Support for newly added Claim 33 can be found in Claim 1, for example. Support for newly added Claim 34 can be found in Fig. 11 and in numbered paragraph [0053] of the specification, for example. Support for newly added Claim 35 can be found in Claim 1, for example. No new matter is added.

In the outstanding Office Action, Claims 1-6, 8, 9, 11-16, and 26-29 were rejected under 35 U.S.C. § 102(b) as anticipated by Matsuyama (U.S. Patent Pub. 2001/0009452). Claims 7 and 10 were rejected under 35 U.S.C. § 103(a) as obvious over Matsuyama. Claim 30 was rejected under 35 U.S.C. § 103(a) as obvious over Matsuyama in view of Takekuma (U.S. Patent No. 6,284,043). Claim 31 was rejected under 35 U.S.C. § 103(a) as obvious over Matsuyama.

Regarding the rejection of Claim 1 as anticipated by Matsuyama, that rejection is respectfully traversed by the present response.

Amended independent Claim 1 recites certain features from now-canceled Claim 30, which was rejected as obvious over Matsuyama in view of Takekuma. Accordingly, Applicants address the rejection of Claim 30 in relation to Claim 1 as follows.

Amended independent Claim 1 recites, in part:

a developer buffer portion having a developer buffer chamber provided in the developer supply nozzle to temporarily store the developing solution;

said first temperature regulating device provided to regulate temperature of the developer in the developer buffer chamber;

the ejection port provided below the developer buffer chamber;

a communication passage allowing the developer stored in the developer buffer chamber to be fed into the ejection port;

a damper rod provided within the ejection port at a location such that the developer fed into the ejection port via the communication passage collides with the damper rod; and

said second temperature regulating device is disposed in the damper rod.

Thus, the damper rod is provided **within the ejection port. The second temperature regulating device is disposed in the damper rod.**

One example of the above-noted arrangement is depicted in Fig. 11 by the damper rod (45A).

One benefit of the above-noted arrangement is that precise temperature control is easier inasmuch as the parameters of flow around the rod are relatively well controlled.

In contrast, as acknowledged on page 7 of the outstanding Office Action, Matsuyama does not disclose a damper rod arranged in an injection port of a developer supply nozzle.

The outstanding Office Action relies on Takekuma for this feature. However, Applicants respectfully note that, as shown in Fig. 8, the collision bar (62) is disposed entirely outside of the opening (61) through which developer is dispensed. Accordingly, neither Matsuyama nor Takekuma discloses a damper rod provided within an injection port as recited in amended independent Claim 1.

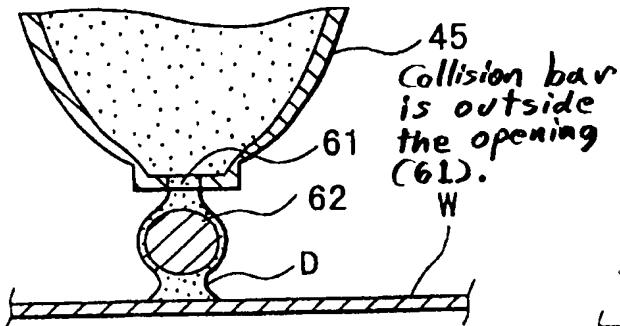


FIG. 8

As is evident from annotated Fig. 8 from Takekuma above, the collision bar (62) is not disposed **within the ejection port**. Accordingly, no reasonable combination of Matsuyama and Takekuma would include all of the features recited in amended independent Claim 1 or any of the claims depending therefrom.

Additionally, amended independent Claim 1 recites that the second temperature regulating device is disposed **in the damper rod**.

In contrast, Takekuma, which is cited in the outstanding Office Action for the recited damper rod, does not include a temperature regulating device, much less a second temperature regulating device. Therefore, Takekuma does not disclose a second temperature regulating device disposed in the damper rod as recited in Claim 1. Accordingly, Applicants respectfully submit that no reasonable combination of the cited references would include all of the features recited in amended independent Claim 1 or any of the claims depending therefrom for at least this additional reason.

Newly added independent Claim 33 recites substantially similar features to those discussed above regarding amended independent Claim 1. Accordingly, Applicants respectfully submit that new independent Claim 33 and any claims depending therefrom patentably distinguish over any reasonable combination of Matsuyama and Takekuma for at least the same reasons as amended independent Claim 1 does.

Newly added independent Claim 35 recites, in part:

means for controlling temperature of the developing solution according to a type of the resist on the substrate or a specific geometrical characteristic of a pattern of the resist; and

means for controlling initiation timing of delivering of the diluent from the diluent supply nozzle to the substrate held by the substrate holder such that the delivering of the diluent initiates when the developing solution is deteriorated due to progression of developing reaction of the developing solution delivered to the substrate so that a developing reaction rate is lowered.

Thus, the means for controlling initiation timing initiates delivering when developing solution is deteriorated due to progression of developing reaction of the developing solution delivered to the substrate so that a developing reaction rate is lowered.

The outstanding Office Action asserts that the control unit in Matsuyama is "capable of being used for controlling operation of the diluent supply nozzle such that the diluent is supplied to a surface of the substrate when the developing solution is deteriorated due to..."<sup>1</sup>

However, Applicants respectfully note that Matsuyama is directed to preventing an undesirable drip onto the substrate, and Matsuyama controls the nozzle in order to avoid placing the nozzle over the coated substrate. In another aspect, Matsuyama washes the supply nozzle in washing tanks located outside the substrate. In yet another aspect, Matsuyama provides a pure water supply hole (112) that supplies a film of water on the wafer (W) so that a developer solution supply hole (111) may apply a layer of developing solution onto a film of pure water (see paragraph [0096] of Matsuyama). In another embodiment, Matsuyama first provides developer, then provides developer and pure water simultaneously in a predetermined ratio, and the ratio gradually changes to a point where only pure water is supplied to the wafer (see paragraph [0100-0101]). Matsuyama's object in providing the pure water in this way is to avoid pH shock, not to initiate delivering of diluent when developing solution is deteriorated due to progression of developing reaction of the developing solution

---

<sup>1</sup> Outstanding Office Action, page 3.

delivered to the substrate so that a developing reaction rate is lowered as recited in Claim 35. The disclosed configuration in Matsuyama does not perform the above-noted function recited in means-plus-function format in Claim 35. Nor would a person of ordinary skill in the art, in light of the intended purpose disclosed in Matsuyama, have had any reason to modify Matsuyama to perform this function. Rather, such a modification may run contrary to Matsuyama's intended purpose of avoiding pH shock, and therefore, Matsuyama teaches away from this feature. Additionally, assuming arguendo that Matsuyama is capable of being modified to perform the function recited in Claim 35, such a capability to be modified does not correlate to being presently configured to perform the recited function. Rather, in order to render the recited feature obvious, a person of ordinary skill in the art would have had to have had, at the time the invention recited in Claim 35 was made, an apparent reason to modify Matsuyama to function in the recited manner. As discussed above, not only does Matsuyama fail to disclose the recited function, Matsuyama teaches away from modification to include this function. Accordingly, Claim 35 and the claims depending therefrom patentably distinguish over Matsuyama for at least the reasons discussed above.

Takekuma fails to remedy the deficiencies discussed above regarding Matsuyama. Rather, the outstanding Office Action relies on Takekuma for the feature of a damper rod arranged in an injection port of a developer supply nozzle. However, Takekuma is silent regarding means for controlling initiation timing to initiate delivering diluent **when developing solution is deteriorated** due to progression of developing reaction of the developing solution delivered to the substrate so that a developing reaction rate is lowered. Additionally, as discussed above, Matsuyama teaches away from this feature. Accordingly, no reasonable combination of Matsuyama and Takekuma would include all the features of Claim 35 or any of the claims depending therefrom.

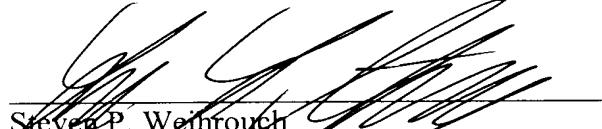
Newly added dependent Claim 32 recites specific features relating to the second temperature regulating device disposed in the damper rod. As noted above, Takekuma does not disclose the damper rod recited in amended independent Claim 1. Therefore, Takekuma does not disclose the specific features recited in dependent Claim 32 relating to this damper rod, and newly added dependent Claim 32 further patentably distinguishes over any reasonable combination of the cited references by virtue of these additional features.

For the foregoing reasons, it is respectfully submitted that this application is now in condition for allowance. A Notice of Allowance for Claims 1-7, 11, 12, 17-29, and 31-35 is earnestly solicited.

Should Primary Examiner Koch deem that any further action is necessary to place this application in even better form for allowance, Primary Examiner Koch is encouraged to contact Applicants' undersigned representative at the below-listed telephone number.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, L.L.P.

  
Steven P. Wehrrouch  
Attorney of Record  
Registration No. 32,829

Customer Number  
**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 08/09)

Lee Stepina  
Registration No. 56,837